

Remarks

The Office should be well acquainted with the present invention, because of having served as the International Preliminary Examining Authority for the International Stage of this application. The Office has applied the same references as in the International Stage of this application. Unfortunately, the Office has not considered the pending claims in light of the specification.

To truly understand the invention as claimed, it is fundamental to identify just how special the "*essentially pure calcium carbonate*" is. To do that *unmistakably* from the specification, here are imaged excerpts from page 2 of the specification.

"Chalk-like calcium carbonate" for this invention is essentially pure calcium carbonate.

"Essentially pure calcium carbonate" means a purity of the calcium carbonate is at least 95 weight percent, preferably at least 98 weight percent, and most preferably at least 99 weight percent.

Non-limiting examples of essentially pure calcium carbonate include Caribbean micritic calcium carbonates derived from soft friable marine fossil sedimentary deposits and any other calcium carbonate in the form of chalk mined in any other location in the world wherein the purity of the calcium carbonate is at least 95 weight percent.

and from pages 16-17 concerning Examples 1-14 using 6 different fillers:

Using the above components as a basic mixture for all experimental samples compounded, variable filler additives indicated in the Table 4 below were added to form individual compositions for Examples 1 to 14 inclusive below. Fillers A-C qualify as essentially pure calcium carbonates; Fillers D-F do not. Filler D is an example of a known European chalk that is not known to meet the definition of "essentially pure" because of its discoloration due to impurities. Filler E is an example of conventional calcium carbonate used in North America. Filler F is an example of undesired precipitated calcium carbonate where the chemical precipitation process has destroyed the naturally occurring morphology of essentially pure Fillers A-C.

Table 4						
Filler Information						
Brand Name	A. Optifil T	B. Optifil 100T	C. Optifil JS (WIT)	D. Omyalite	E. Camel Cal ST	F. Polar 81xxC
Ore Type	Chalk	Chalk	Chalk	Chalk	Limestone	Chalk
Country Origin	Jamaica	Jamaica	Jamaica	France	USA	Jamaica
Mfg. Process	Dry	Dry	Wet	Wet	Wet	Precipit.
Dry Y brightness	93	93.9			96	
Mean particle size (µm)	1.5	1.3	1.2		0.7	
% less than 2 µm	50%					
% less than 1 micron	19%					
Coating Level	1%	1%	1%		1%	

Table 4						
Filler Information						
Brand Name	A. Optifil T	B. Optifil 100T	C. Optifil JS (WIT)	D. Omyalite	E. Camel Cal ST	F. Polar 81xxC
Coating Type	Stearic	Stearic	Stearic		Stearic	
% CaCO ₃	99%	99.2%	99.3%		90%	
% MgCO ₃	0.4%	0.3%	0.3%			
% SiO ₂	0.1%	0.02%	0.02%		0.15%	

The Office has not given proper attention to the specification when considering the claimed invention. Applicants are claiming *essentially pure calcium carbonate* which has the specially defined meaning from page 2 of the specification. Fillers A-C from Table 4 show three different examples of *essentially pure calcium carbonate*, as distinguished from three other types of *calcium carbonate* which are **NOT** essentially pure, as defined by Applicants.

The test results for *essentially pure calcium carbonate* Fillers A-C and conventional calcium carbonate Fillers D-F are reported at page 19. With one exception, superior performance is identified in direct-to-direct comparison tests.

At the 1,050 hour interval, Examples 1, 5 and 7 (Fillers A-C at 12 parts) had out-performed comparative Examples 2, 3, 9, and 11 (Fillers D-F at 12 parts). Example 13 was abandoned as obviously inferior at the 350 hour interval.

At the 1,050 hour interval, Examples 4, 6, and 8 (Fillers A-C at 6 parts) had mostly out-performed comparative Examples 10 and 12 (Fillers D and E at 6 parts). Example 14 was abandoned as obviously inferior at the 350 hour interval.

As the interval increased to 1,500 hours, Examples 5 and 7 (Fillers B and C) showed maintained superiority over comparative Examples 9 and 11. But by 2,000 hours, the weathering data for comparative Examples had exceeded the Examples of the present invention.

Nonetheless, a sample of the Examples has been shown to endure at least 3 years of uninterrupted exposure to the climate of the Southwestern United States. The sample was located in an Arizona testing facility. Its Hunter Delta B after three years indicated superior weathering resistance according to the selection and use essentially pure calcium carbonate of the present invention.

Examples 15 and 16 also show excellent performance of the *essentially pure calcium carbonate* of the present invention for both natural and pigmented PVC.

Table 11 shows that excellent weathering of natural and pigmented PVC compounds are obtained using Jamaican calcium carbonate according to the present invention.

With those portions of the specification serving as principal argument for patentability, the undersigned now turns to the specific rejections.

§112, Second Paragraph Rejections

The Office rejected Claims 1, 6, 7, 11, 13, 16, and 17 because applicants had used "about" in the phrases "at least about" and "less than about". The Office calls that phraseology "indefinite". Applicants have deleted "about" in those instances and other places in the claims, in order to place the pending claims in condition for allowance, despite the reality that 67,512 separate U.S. Patents have the phrase "at least about" in their claims¹, and that 54,862 separate U.S. Patents have the phrase "less than about" in their claims².

¹ Results of Search in US Patent Collection db for:
ACLM/"at least about": 67512 patents.

² Results of Search in US Patent Collection db for:
ACLM/"less than about": 54862 patents.

The Office rejected Claims 1, 2, 4, and 11 because applicants used "essentially" in those claims as a part of the defined phrase: *essentially pure calcium carbonate* arising from their specification on page 2. Because inventors can be their own lexicographers in defined words or phrases, "essentially" as a part of this defined phrase is definite to one of ordinary skill in the art and can not be deleted from the claims.

§103 Rejections

All claims except Claim 5 and Claim 15 are rejected using a three-reference combination of Lehr in view of Hung et al. and Lamond.

First of all, Applicants admit their defined "essentially pure calcium carbonate" is of the type disclosed in Lamond. See page 3 of the Specification.

Secondly, Applicants emphasize that Lamond only teaches the use of such "essentially pure calcium carbonate" for **polyester molding**. The Office admits this usage by Lamond.

Thirdly, Applicants assert that Lehr does not teach or suggest the use of calcium carbonate for use with poly(vinyl chloride) containing materials. The Office admits this deficiency in the teaching of Lehr.

Fourthly, the only way one of ordinary skill would reach to combine Lehr and Lamond is via some intermediate teaching.

The Office uses Hung et al as that supposed intermediate teaching. Applicants disagree strenuously and traverse this rejection.

Applicants' "essentially pure calcium carbonate" is NOT a heat stabilizer. Applicants use "essentially pure calcium carbonate" because it is a **light stabilizer**. Hung et al. only discloses the use of metal-based **heat stabilizers, not light stabilizers**. Therefore, to combine Lehr + Hung et al. + Lamond would confuse one of ordinary skill because Hung et al. is irrelevant to the use of unexpectedly special kind of calcium carbonate as a light stabilizer.

There is no linkage between a metal-containing *light* stabilizer and metal-containing *heat* stabilizer in the combination of Lehr + Hung et al. + Lamond. These two types of stabilizers are NOT functional equivalents. One stabilizes against

infrared radiation -- heat. The other stabilizes against ultraviolet radiation. Some confirmation of that point resides in Applicants' own explanation of the option of having heat stabilizers as an additional ingredient. See page 6 of the Specification and Claim 6.

Thus, this rejection returns to a motivation of one of *ordinary* skill to look to **polyester molding** art to find an exceptional and unexpectedly well-performing type of calcium carbonate for use in **poly(vinyl chloride)**. Applicants assert that no one of *ordinary* skill in the art would be motivated to go to polyester molding art to find a special ingredient for poly(vinyl chloride) that functions as a "scavenger for free HCl acid generated in PVCs upon exposure to visible and ultraviolet light." After all, one of *ordinary* skill would have had 10 years of Lamond teaching (1992) to combine it with Lehr (1987). Yet no one did so.

Applicants assert why no one did so. Lamond teaches this particular essentially pure calcium carbonate only as a filler. Lamond does NOT teach any acid scavenging, light-stabilizing properties for this particular essentially pure calcium carbonate.³

No one until Applicants saw the value of this particular *essentially pure calcium carbonate* to serve as an acid scavenging, light-stabilizing ingredient useful for poly(vinyl chloride), a polymer that has a problem of generating free HCl acid when exposed to too much high-energy light.

No one until Applicants saw the value of taking a filler used with polyesters and using it as a scavenger for use in poly(vinyl chloride) as a light stabilizer. No one until Applicants recognized the distinction of acid-scavenging properties between an "*essentially pure calcium carbonate*" and other naturally occurring, but impure calcium carbonate or synthetically generated calcium carbonate.

The Office can not use hindsight to reconstruct Applicants' invention as claimed in Claims 1-4, 6-14, 16-20.

³ The undersigned uses www.uspto.gov to locate the applicable patent and then uses the Find feature to search for key words, portions of words, or phrases to be comprehensive in such statements.

The Office rejected Claims 5 and 15 using the Lehr/(Hung and Lamond) combination, plus Higgs et al. Higgs et al. add a teaching of surface treatment with a stearate compound. The *same fatality* of the Lehr(Hung and Lamond) combination also applies to Claims 5 and 15.

Conclusion

Applicants have demonstrated with many examples why their *essentially pure calcium carbonate* performs spectacularly as a light stabilizer, defining and directly distinguishing their choice of calcium carbonate from three different types of conventional calcium carbonates.

The pending Claims 1-20 are allowable or ready for appeal.

January 23, 2007
Date

PolyOne Corporation
33587 Walker Road
Avon Lake, Ohio 44012

Respectfully submitted by:

John H. Hornickel
John H. Hornickel
Registration No. 29,393

Telephone: 440-930-3317
Fax: 440-930-1179
John.Hornickel@PolyOne.com